CLAIMS

1. A method for detecting a packet in multiple signals received in parallel from at least two transmission antennas, the method being characterized by steps of:

computing the power-normalized auto-correlations of the received signals tuned on the periodicity of short training symbols, said short training symbols having time periods shorter than one OFDM symbol;

determining whether the sum of the moduli of the power-normalized, auto-correlation exceeds a first predetermined threshold;

upon a determination that the sum of the moduli of a power-normalized, auto-correlation exceeds the first predetermined threshold, computing the cross-correlations between the received signals and the aperiodic sequences in a selected time window, said time window sliding in time for a quantity larger than the variance of the first predetermined threshold crossing instant;

computing the maximum value of the sum of the moduli of the cross-correlations;

determining whether the maximum value of the sum of the moduli of the cross-correlations exceeds a second predetermined threshold; and

upon a determination that the maximum value of the sum of the moduli of the cross-correlations exceeds a second predetermined threshold, identifying a packet as received.

2. The method of Claim 1 further characterized in that, upon a determination that the sum of the moduli of a power-normalized, auto-correlation does not exceed the first predetermined threshold, repeating the step of computing the power-normalized auto-correlations of next received signals tuned on the periodicity of short training symbols.

3. The method of Claim 1 further characterized in that the short training symbols constitute a first part of a training sequence comprising at least one OFDM symbol having a time-periodic component effective for packet detection and coarse frequency offset correction.

4. The method of Claim 1 further characterized in that the short training symbols constitute the first part of a training sequence, and wherein the part of the

training sequence used for packet detection is contained in the first at least one OFDM symbol of the whole training sequence.

5. The method of Claim 1 further characterized in that the periodic portion of the received signals is substantially orthogonal between said at least two transmission antennas.

6. The method of Claim 1 further characterized in that the first part of the training sequence is further characterized by a non-periodic component effective for rejecting interferers.

7. The method of Claim 1 further characterized in that the first part of the training sequence is further characterized by a non-periodic component effective for rejecting interferers, said interferer comprising a DC component.

8. The method of Claim 1 wherein the first part of the training sequence is further characterized by a non-periodic component in the first OFDM symbol, and is effective for rejecting interferers.

9. The method of Claim 1 further characterized in that the first part of the training sequence is further characterized by a non-periodic component in the first OFDM symbol, and is effective for rejecting interferers, said interferers including a DC component.

10. The method of Claim 1 further characterized in that the non-periodic component is orthogonal between said at least two transmission antennas.

11. An apparatus for detecting a packet in multiple signals received in parallel from at least two transmission antennas, the apparatus being characterized by:

a first computational portion configured for computing the power-normalized auto-correlations of the received signals tuned on the periodicity of short training symbols, said short training symbols having time periods shorter than one OFDM symbol;

a first comparator configured for determining when the sum of the moduli of the power-normalized, auto-correlation exceeds a first predetermined threshold;

a second computational portion configured, upon a determination that the sum of the moduli of a power-normalized, auto-correlation exceeds the first predetermined threshold, for computing the cross-correlations between the received signals and the

aperiodic sequences in a selected time window, said time window sliding in time for a quantity larger than the variance of the first predetermined threshold crossing instant; and

a second comparator configured for computing the maximum value of the sum of the moduli of the cross-correlations, and for determining when the maximum value of the sum of the moduli of the cross-correlations exceeds a second predetermined threshold, and upon a determination that the maximum value of the sum of the moduli of the cross-correlations exceeds a second predetermined threshold, for identifying a packet as received.

12. The apparatus of Claim 11, wherein said first computational portion is further characterized, upon a determination that the sum of the moduli of a power-normalized, auto-correlation does not exceed the first predetermined threshold, as computing the power-normalized auto-correlations of next received signals tuned on the periodicity of short training symbols.

13. The apparatus of Claim 11 further characterized in that the short training symbols constitute a first part of a training sequence comprising at least one OFDM symbol having a time-periodic component effective for packet detection and coarse frequency offset correction.

14. The apparatus of Claim 11 further characterized in that the short training symbols constitute the first part of a training sequence, and wherein the part of the training sequence used for packet detection is contained in the first at least one OFDM symbol of the whole training sequence.

15. The apparatus of Claim 11 further characterized in that the periodic portion of the received signals is substantially orthogonal between said at least two transmission antennas.

16. The apparatus of Claim 11 further characterized in that the first part of the training sequence is further characterized by a non-periodic component effective for rejecting interferers.

17. The apparatus of Claim 11 further characterized in that the first part of the training sequence is further characterized by a non-periodic component effective for rejecting interferers, said interferer comprising a DC component.

18. The apparatus of Claim 11 wherein the first part of the training sequence is further characterized by a non-periodic component in the first OFDM symbol, and is effective for rejecting interferers.

19. The apparatus of Claim 11 further characterized in that the first part of the training sequence is further characterized by a non-periodic component in the first OFDM symbol, and is effective for rejecting interferers, said interferers including a DC component.

20. The apparatus of Claim 11 further characterized in that the non-periodic component is orthogonal between said at least two transmission antennas.